Remarks

Regarding item 1, the abstract has been amended to meet this objection.

Regarding items 2 and 3, claim 1 has been amended to make it clearer that the primary connections are referred to. Corresponding amendments have been made to claims 38 and 39.

Regarding the term "permanent connection" in claim 4 and 33, this is a term commonly used in this technical field. The usual meaning of permanent is the opposite of temporary, and in the context of a connection, this still applies. A person skilled in the art would appreciate that a connection can be defined by not only the physical transmission path but also the configuration of software to determine how the path is used, reserved and shared with other connections. Such a configuration can be made temporarily, while there is traffic to use it, and removed after use. Hence the term permanent implies that the connection is maintained even when not used, for example to maintain a reservation of part of a shared transmission capacity or to save time spent setting up the connection each time.

Regarding claim 14, the claim indicates a **traffic capacity** of the secondary connection at one level may be equal to the **switching granularity** of a different level. This is not the same as trying to say the switching granularity at one level is the same as granularity at another level, so there is no inconsistency and no amendment is needed.

Regarding claim 15, again the claim indicates a **traffic capacity** of the secondary connection at one level may be equal to the **switching granularity** of a different level. Hence the same comment applies, there is no inconsistency and no amendment is needed.

Regarding claim 20, the specification at page 18 provides examples of "type of traffic" such as TDM, optical WDM and asynchronous. Hence, this claim has been amended to refer to the switch node being arranged to switch traffic of more than one multiplexing type, and to replace the reference to transparent.

Regarding claim 36, the term "hitless" is again commonly used in this technical field. It is widely understood as meaning a reconfiguration without a service disruption, so traffic is not lost. No ambiguity is seen and so amendment seems appropriate.

Regarding items 4 and 5, the rejection of claim 1 for obviousness over Chopping in view of Steeley is respectfully traversed. The Examiner acknowledges that Chopping only shows primary connections between switches of different granularity, not secondary connections between switches of the same granularity. Steeley is not relevant because it is not even concerned with switches of different granularity. It shows that "by coupling a small number of processors using a local switch at a SMP (symmetric multi processor) node, and then coupling a number of nodes using a hierarchical switch into a large SMP, a scalable high performance system can be realized." There is no suggestion that this hierarchical switch is of a coarser granularity. Hence this document would not be considered as pointing to a potential improvement or solution for switching at different granularities.

Even if it were somehow to be considered with Chopping, the two documents do not show a notable claim feature, and they would lead a skilled person in a different direction, away from the invention. Two alternative implementations are shown in Figs 7A and 7B of Steeley. The first shows connections from local switches to the hierarchical switch, without connections between the local switches. The alternative, in Fig 7B, is to dispense with the hierarchical switch and have two local switches coupled directly to each other. Chopping already shows the first alternative, so the combination with Chopping could only add the second alternative, of replacing the primary connections with secondary connections.

In contrast, the claim specifies a different approach, of having both types of connections, primary connections between levels having switch nodes of different granularity and secondary connections between switch nodes of the same level of granularity.

There is no suggestion in any of the cited references of this claim feature, nor of the advantages of more efficient distribution of switching and more efficient filling of

connections that can be enabled. Hence there is no incentive to combine the cited references, and even if they are combined, there is no incentive to modify the combination to reach the invention as claimed. For these reasons the claims are not obvious. All the independent claims contain corresponding features and so this reasoning applies to all the claims. The amendments made to claim 1 do not affect this reasoning.

New claim 40 has been added which is similar to claim 1 and including the distinctive feature discussed above, but without the feature of claim 1 of filling each path along the primary connection to a predetermined level.

The Examiner's obviousness rejection of claim 1 does not address this further claim feature of filling each path along the primary connection to a predetermined level, which has now been clarified by the above amendment. If the obviousness rejection is maintained for any reason, it would be useful to have some further reasoning relating to this additional distinctive feature.

An example discussing this feature is set out at page 15 of the present application:
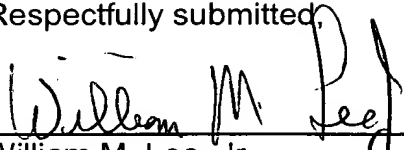
> "Residual traffic, being traffic which is not capable of filling a switch connection to capacity is routed by the switch node 2 along permanent connection 15 to switch node 3. Thus residual traffic remains within the fine granularity switching level and does not need to access the switch node 5 of the coarse granularity switching level. Similarly, traffic received by switch node 2 with the destination switch node 4 is either routed along switch connection paths along primary connections 9 and 11 or along permanent connection 17.
>
> The number of switch connection paths required is reassessed as traffic is routed through the switch. Traffic is suitably monitored to determine the most efficient use of the switch connection paths established by the first switch layer switch node, and to gauge the need to switch traffic between a switch connection path and a secondary connection. "

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Accordingly all the points raised have been dealt with, all the claims are submitted to be allowable and reconsideration is requested.

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